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In re application of:	Henry, G. Glenn McDonald, Thomas C.	Examiner:	Dr. Henry Tsai
Docket:	CNTR.2023	Art Unit:	2183
Serial No.:	09/849734		
Filing Date:	5/4/2001		
Title:	SPECULATIVE HYBRID BRANCH DIRECTION PREDICTOR		

Dr. Tsai:

In response to the Official Action dated August 13, 2004, please consider the arguments related to the above identified application.

Claim 37 recites a step of generating a plurality of speculative branch direction predictions of an instruction prior to decoding the instruction. Applicant refers the Examiner to Fig. 12 for an embodiment illustrating this step of claim 37. The BHT and the BTAC each generate a speculative direction prediction for a branch instruction prior to decoding the instruction; hence collectively the BHT and BTAC generate a plurality of predictions. Applicant notes the invention claimed in claim 37 is not limited to the embodiment of Fig. 12, which is referenced here only for the purpose of illustrating the differences with the art cited by the Examiner.

The Examiner states Fig. 11 of *Emma* shows a BHT that generates a plurality of speculative branch direction predictions ('T' entries) in response to a single instruction fetch. Applicant respectfully asserts that Fig. 11 does not show a single instruction fetch; rather Fig. 11 shows a single instruction cache line fetch (a cache line is referred to in *Emma* as an "instruction fetch segment"). See col. 7, lines 3-11. However, each cache line may contain several taken branch instructions. See col. 7, line 66 to col. 8, line 4; col. 15, lines 25-26; col. 12, line 62 to col. 13, line 3. Consequently, *Emma*'s 'T' entries are each a single direction prediction for each of a plurality of branch instructions in a cache line, and one of the branch instructions in the cache line is selected for prediction. See col. 15, lines 23-32. Therefore, *Emma*'s BHT does not generate a plurality of speculative branch direction predictions for an instruction, rather generates a single branch direction prediction for each of a plurality of branch instructions in a cache line.

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